THE MINERAL INDUSTRY OF

CONGO (KINSHASA)

By George J. Coakley

Introduction

The Democratic Republic of the Congo [Congo (Kinshasa)] is located in the heart of equatorial central Africa and has an area of 2,267,600 square kilometers (km²), which is about one- quarter that of the United States. The area supported a population of about 52 million in mid-2000 with a gross domestic product (GDP) per capita of $710 based on 1999 purchasing power parity data (U.S. Central Intelligence Agency, 2000, Democratic Republic of the Congo—Economy, World Factbook, accessed February 26, 2001, at URL http://www.odci.gov/cia/publications/factbook/geos/cg.html). Historically, the mining industry accounted for 25% of the GDP and about three-quarters of total export revenues. Congo (Kinshasa) is richly endowed with such mineral resources as coal, cobalt, columbium (niobium)- tantalum (locally referred to as "coltan"), copper, diamond, germanium, gold, manganese, petroleum, tin, uranium, and zinc. Despite the collapse of much of the formal mining infrastructure, it is still an important world source of industrial diamonds and cobalt (table 1).

Responding to a tenfold increase in the world market price for tantalum from the $30-per-pound range to as high as $300 per pound during 2000, a strong financial incentive was behind the renewed interest in the artisanal mining of columbium-tantalum ore in north Kivu Province. Tantalum is consumed mostly in the form of capacitor-grade metal powder by the electronics industry. Tantalum capacitors are used in portable telephones, pagers, personal computers, and automotive electronics.

The near collapse of the economy has made sustaining normal mining activities difficult; with some exceptions, most foreign exploration activity and development-oriented feasibility work came to a halt by the end of 1998. Following a 1-year hiatus, a new full-scale civil war broke out in August 1998 and is still ongoing in early 2001. The war has had a major impact on the region and has drawn in military support for the Government forces, the Alliance of Democratic Forces for the Liberation of Congo-Zaire (AFDL), from Angola, Namibia, and Zimbabwe and military support for the rebel forces, which included factions of the Rally for Congolese Democracy (RCD) and the Movement for the Liberation of the Congo from Burundi, Rwanda, and Uganda. Cross-border flows of refugees displaced from Rwanda or Congo (Kinshasa) have also impacted the economies of Tanzania and Zambia. Discord in the AFDL's military forces and the assassination of its leader the President of Congo (Kinshasa) on January 16, 2001, added further uncertainty to the future of the country.

A survey conducted by the New York-based International Rescue Committee estimated that more than 3 million people have died since the beginning of the conflict in August 1998, most not from fighting, but from "starvation, disease and deprivation." The survey was conducted only in the RCD-held eastern half of the country where most of the fighting and even more of the accompanying hardship has taken place. The toll would almost surely be higher if the Government-held western half were included (Karl Vick, April 30, 2001, Death toll in Congo war may approach 3 million, Washington Post, accessed May 1, 2001, at URL http://www.washingtonpost.com/wp-dyn/articles/A20629-2001Apr29.html).

During 2000, increasing international concern over the extent to which the country's mineral resources were being exploited by all factions to help finance the war or for personal gain led to the United Nations (U.N.) Security Council to establish a Panel of Experts in June (Security Council statement S/prst/2000/20) to investigate these allegations. Empaneled in August, the Panel of Experts was given 6 months to report its initial findings back to the U.N., which they did in early 2001. The Panel of Experts said that "all belligerents in the war were benefiting in one way or another, with the Congolese people the only losers, and now the conflict was mainly about access, control and trade of coltan, diamond, copper, cobalt and gold, as well as timber, coffee and ivory" (United Nations Security Council, 2001, p. 41-42).

The report discussed the illegal exploitation of resources through confiscation, extraction, forced monopoly, and price fixing. References are made to the illegal transfer of stockpiled ore owned by Société Minière et Industrielle du Kivu (SOMINKI), which included from 2000 to 3000 metric tons (t) of cassiterite (tin ore), and 1,000 to 1,500 t of coltan, from Kivu Province to Rwanda between November 1998 and April 1999; illegal gold mining by civilians and military; tributes paid by artisanal miners to occupying soldiers to exit gold mining areas; the use of prison labor to mine coltan by Rwanda; and the organized export of exploited resources through Rwanda and Uganda. The Panel recommended that the Security Council immediately declare a temporary embargo on the import or export of cassiterite, coltan, diamonds, gold, pyrochlore, and timber from or to Burundi, Rwanda, and Uganda and that all countries should abstain from facilitating the import or export of these resources. Other non-military recommendations included freezing the financial assets of rebel movements and companies or individuals involved in the illegal exploitation of natural resources (United Nations Security Council, 2001, p. 42-44).

The Washington Post further described the "wild West" atmosphere that surrounded coltan mining in Kivu Province, and how, on the Government side, the granting of mineral concessions to military allies has been well documented—offshore oil wells to Angola, diamond and cobalt to Zimbabwe, and a share of a diamond mine to Namibia. The Washington Post article quoted an RCD source as saying the RCD "raised more or less $200,000 per month from diamonds, and that col- tan gives us more: a million dollars a month" (Karl Vick, March 19, 2001, Vital ore funds Congo's war micha micha— Combatants profit from col-tan trade, Washington Post, accessed May 1, 2001, at URL http://www.washingtonpost.com/ wp-dyn/articles/ A16657-2001Mar16.html).

Government Policies and Programs

Legislation has been passed relating to all aspects of the mineral industry. Article 10 of the April 1994 Constitution states that the soil and subsoil belong to the state. Prospecting, exploration, and exploitation were regulated by Ordinance No. 81-013 of April 2, 1981, and required permits from the Ministry of Mines and Energy. The Ministry was working on developing a new mining and foreign investment law during 2000 and was expected to announce the details in early 2001, although the Presidential assassination and resulting changes in Government may delay the announcement.

Production and Trade

As estimated in table 1, production of the more important commodities decreased from that of 1999. Cobalt and copper were down 26% and 34%, respectively, as the state-owned La Générale des Carrières et des Mines (Gécamines), which had been historically the nation's major foreign currency export earner, continued its struggle to maintain copper production at from 5% to 10% of capacity. Diamond production appeared to decline by 12%, but exact figures are uncertain owing to the high level of smuggling and undocumented production. Crude petroleum production increased by 19% to around 28,200 barrels per day (bbl/d). Officially reported gold production was around 52 kilograms (kg); undocumented gold production in RCD-controlled areas, however, could range from 3,000 to 6,000 kg. Likewise, reports of columbium-tantalum concentrate production vary widely—the tenfold increase in tantalum prices, however, would make an estimate of at least 450,000 kg of concentrate not unreasonable given the identified mineral resources and obvious financial incentives. Historically, the main trading partners of Congo (Kinshasa) were Belgium, France, Germany, Japan, South Africa, and the United States.

Structure of the Mineral Industry

The Government maintained at least part ownership and generally majority ownership of nearly all the productive and service sectors of the economy. Gécamines produced essentially all of the country's coal, cobalt, and copper. It also operated subsidiaries that produced cement and other materials required for its primary mineral interests. Société Minière de Bakwanga (MIBA), which was 80% owned by the Government, produced about 25% of industrial diamond production from the Government-controlled lands in the Kasai Provinces with the remainder coming from small artisanal operators. SOMINIKI, which was the columbium-tantalum, gold, and tin producer, and Office des Mines d'Or de Kilo-Moto (Okimo), which was the major gold producer, were the other principal parastatal mining companies. The majority of SOMINIKI and Okimo holdings were in rebel-held areas in eastern Congo (Kinshasa).

During 1997 and for more than half of 1998, prior to the renewed outbreak of the current civil war, Gécamines used joint ventures to attract the capital needed to revitalize operations. Foreign investors retained up to 49% equity interest in these joint-venture arrangements, most of which ranged from 20% to 45%. By the beginning of 1998, Gécamines had 23 cooperative projects, which included development of the Tenke-Fungurume deposits, that it hoped would return production levels of copper to 400,000 t and cobalt to 25,000 t. During 2000, however, most of these projects were either on force majeure hold or proceeding cautiously with feasibility work.

Commodity Review

Metals

Copper and Cobalt.—Gécamines holdings in the Copperbelt in Katanga Province contained one of the greatest concentrations of high-grade copper and coproduct cobalt resources in the world. Since 1993, most mining operations have come to a standstill with total capacity utilization at less than 10%. Gécamines faced multiple crises in finance, production, and transportation. The company's poor condition was attributed to a combination of aging equipment; lack of domestic and international investment; lack of spare parts; shortages of fuel, lubricants, and sulfuric acid; problems with transporting ore and finished products; theft of finished products; debts owed to the state electrical company and Société Interrégionale Zaïroise de Rail (Sizarail); flooding of open pit mines; and the inability to retain professional and other personnel because of disruptions caused by the war and other factors. Société Nationale des Chemins de Fer du Congo has taken over the holdings of Sizarail.

During 2000, the OM Group, Inc. (OMG), of the United States, which was one of world's largest consumers of refined cobalt, and l'Enterprise Generale Malta Forrest SPRL began to produce at full capacity from their Luiswishi copper-cobalt project. OMG had a long-term contract for approximately 5,000 metric tons per year (t/yr) of cobalt and 9,000 t/yr of copper on a right of first refusal. OMG's $110 million Big Hill cobalt smelter in Lubumbashi began production in the fourth quarter of 2000; full operational capacity of 5,000 t/yr was expected during 2001. The smelter was treating an adjacent slag stockpile, which was sufficient to supply the plant for 20 years. Concentrates produced were shipped to the OMG Kokkola chemical plant in Finland (OM Group, Inc., 2001, p. 3, 7).

In March 1998, First Quantum Minerals Ltd. of Canada signed two agreements with Gécamines for the retreatment of large high-grade copper-cobalt tailings dumps—the Kingamiambo and the Luilu tailings dumps, which are located in the Kolwezi district, and the Panda and the Shituru tailings dumps, which are located at Likasi. During 1999, First Quantum completed its initial feasibility study on the project and announced mineral-resource estimates for the four tailings dumps but then curtailed development activities owing to the political situation. The company continued to pursue financial partners for what it described as economically robust projects once the political climate stabilizes.

First Quantum reported no activity on these projects during 2000. In February 2001, however, Mopani Copper Mines PLC of Zambia, in which First Quantum held a 44% interest, began negotiations with Gécamines to exploit jointly the ore deposits at Luansobe, which is an extension of the Mufulira Mine that stretches across the border from Zambia into Congo (Kinshasa). Ore from the Luansobe ore deposit would be processed in Zambia and extend the life-span of Mufulira Mine from the 2000 estimate of 15 years to 25 years (Lewis Mwanangombe, February 23, 2001, Mopani Copper Mines Plc in negotiation with Gécamines, Panafrican News Agency (Dakar), accessed April 10, 2001 at URL http://allafrica.com/stories/200102230120.html).

Anvil Mining NL of Australia, and First Quantum, which was its minority partner, (16.5%), held a Mining Convention (concession) for the right to explore and develop the Dikulushi copper-silver deposit in southeastern Congo (Kinshasa) near the Zambian border west of Pweto and Lac Moero. During 1998 and 1999, the company completed feasibility and metallurgical design studies on the high-grade copper-silver Dikulushi deposit. Copper-silver concentrates produced would be treated at the Mopani Copper Mines smelter and refinery facilities in Zambia. Although the project was on hold during 2000, Anvil indicated that it was prepared to proceed with the staged development of Dikulushi as soon as the political risk climate was acceptable (Anvil Mining NL, April 30, 2001, Quarterly report for period ending March 31, 2001, accessed April 30, 2001, at URL http://www.anvil.com.au/qtreports/2001/avl310301.htm).

Tenke Mining Corp. (TMC) of Canada (55%) in joint venture with Gécamines (45%) held the concession to develop the 1,437 km^2 Tenke Fungurume copper-cobalt deposits located within two concessions in Katanga Province approximately 175 kilometers (km) northwest of Lubumbashi. In December, 1998, TMC concluded an option agreement with BHP World Exploration Inc. of Australia whereby BHP would directly or indirectly acquire a 45% ownership interest in the Tenke Fungurume concession in return for providing certain development funding. In February 1999, TMC exercised the force majeure provisions of its agreement with Gécamines that released TMC from meeting certain binding dates to complete a final bankable feasibility study, which was nearing completion, and recognizing the difficulty Gécamines would have in meeting its responsibility for providing power supply, transportation and certain construction resources associated with the project. A description of the project is available at the company website (Tenke Mining Corp, 2000, Projects—Tenke Fungurume, accessed April 10, 2001, through URL http://www.tenke.com). TMC reported that it had been continuing work on the preparation of technical and economic studies related to the potential future development of Tenke Fungurume since mid-2000 and that in May 2001, Phelps Dodge Corp. of the United States had signed an agreement to earn up to 50% of BHP's option interest in the project (Tenke Mining Corp., May 3, 2001, Phelps Dodge joins in BHP's option agreement with Tenke for the Tenke Fungurume copper- cobalt project in DRC, Press Release, accessed May 3, 2001, via URL http://www.tenke.com).

Melkior Resources Inc. of Canada, which has had a presence in Congo (Kinshasa) since 1996, operated under Société Minière de Kabolela et de Kipese (SMKK), which was a local company. SMKK, which was controlled by Melkior (60%) and Gécamines (40%), owned the Kabolela copper-cobalt mine and the Kipese cobalt-palladium-gold exploration property discovered by Melkior. Gécamines reported minable reserves at the Kabolela Mine to be 3.6 million metric tons (Mt) at a grade of 3.81% copper and 0.68% cobalt in addition to a resource of 3.3 Mt at a grade of 3.145 copper and 0.84% cobalt. SMKK treated the first batch of Kabolela ore at the Kakanda concentrator in 2000. The concentrator treated 6,023 t of ore at a grade of 2.81% copper and 1.01% cobalt, thus producing 508 t of concentrates at a grade of 16.02% copper and 5.4% cobalt that contained 81 t of copper and 27.4 t of cobalt. SMKK was expected to produce around 1,600 t/yr of cobalt at full capacity (Melkior Resources Inc., 2000, p. 3-4).

International Panorama Resources Corp. (IPR) of Canada, which acquired a 51% working interest in the Kambove and the Kakanda copper/cobalt tailings reprocessing projects from Gécamines in August 1996, completed feasibility studies in 1997 that called for a $270 million investment to develop the projects. During 1999 and 2000, IPR provided no public updates on the status of its continuing interest in the project.

American Mineral Fields Inc. (AMF) of the United States had a 50-50 joint venture with Anglo American plc through which it held a 60% majority interest in Congo Mineral Developments Ltd. (CMD), Gécamines owned 40%. CMD operated the Kolwezi copper-cobalt tailings project. Early in 2001, CMD renegotiated its agreement with Gécamines to allow for the development of the project in two phases. With an investment of $330 million in Phase I, the plant will treat approximately 3 million metric tons per year (Mt/yr) of tailings, which will yield up to 42,000 t/yr of copper and 7,000 t/yr of cobalt. Phase II would double the rate of treatment. Negotiations on a timetable for completing the feasibility study and arranging financing were ongoing (American Mineral Fields Inc., April 2, 2001, AMZ first quarter 2001 update—Letter to shareholders, accessed May 1, 2001, at URL http://www.am-min.com/reports/2001/Shareholder%27s%20Report.pdf).

Gold.—Société Aurifère du Kivu et du Maniema S.A.R.L. (Sakima) was established in January 1997 to operate the former SOMINIKI gold, tantalum, and tin, mines and other landholdings in the region. Sakima was controlled by Banro Resource Corp. of Canada (93%) and the Government (7%). The old SOMINIKI holdings included 10 mining permits and 47 mining concessions that covered 10,271 km^2. Gold holdings southwest of Bukavu in Kivu Province included the Kamituga-Mobale underground gold mines, which were forced to close during the 1997 civil war, and the Lugushwa, the Namoya, and the Twanziga gold properties. By the Presidential decrees of July 29, 1998, however, the Government, without prior warning or consultation with Banro, dissolved Sakima through which Banro held its mineral properties and carried on business in Congo (Kinshasa), terminated the company's Mining Convention that related to the company's mineral properties, created Société Minière du Congo S.A.R.L. (Somico), and appointed certain Congolese Government nominees as officers of Somico. The action put Banro's ownership of certain Sakima mining concessions and related assets in question (Banro Resource Corp., March 19, 1999, Uncertainty regarding interest in the Democratic Republic of Congo—Consolidated Financial Statements, December 31, 1998 and 1997, Notes to Consolidated Financial Statements, accessed April 1, 1999, at URL http://www.banro.com/123198.html).

In accord with provisions of its Mining Convention with the Government, Banro filed a suit for $1 billion in compensation claims with the International Center for the Settlement of Investment Disputes (ICSID); it was accepted for arbitration in October 1998. Following ICSID tribunal meetings and submission of legal briefs by both sides in 1999 and 2000, in September 2000, the ICSID declined to exercise jurisdiction over the Banro claims. In January 2001, Banro, through its U.S. subsidiary, filed suit against the Government of Congo (Kinshasa) in the U.S. Federal Court in Washington, D.C., pursuant to provisions of the U.S. Foreign Sovereign Immunities Act (Banro Resources Corp., 2000a, b; 2001).

In joint venture with AngloGold Ltd. of South Africa, Barrick Gold Corp. of Canada held a 57,000-km^2 exploration concession near the Kilo-Moto goldfields in the Bunia area of northern Congo (Kinshasa) and adjoining Sudan to the north and Uganda to the east. Ashanti Goldfields Co. Ltd. of Ghana held a 86.2% interest in the 2,000-km^2 Kilo-Moto Mining International S.A.R.L. concession in the rebel- controlled Eastern Province. Owing to the war, Ashanti and Barrick conducted no field activity on these holdings during 2000.

Manganese.—Cliff Mining PLC of the United Kingdom was in a joint venture with the state-owned Enterprise Minière de Kisenge-Manganese to revive the Kisenge manganese ore mine and to increase manganese production to 40,000 t/yr. The Kisenge Mine, which was formerly owned by Belgium's BCK Manganese Company, was nationalized in 1974 and had been completely dormant since about 1990. The company had a 540,000-t stockpile of manganese carbonate ore at a grade of 47% to 50% manganese (Mbendi Information Services, November 29, 2000, Democratic Republic of Congo—Mining industry—Manganese mining, accessed December 22, 2000, at URL http://mbendi.co.za/indy/ming/mang/af/zr/p0005.htm).

Zinc.—Under a 1998 extension of an August 1996 framework agreement between AMF and Gécamines, AMF had a commitment to prepare a feasibility study on the reopening of the Kipushi underground zinc-copper mine, rehabilitating the concentrator, and reprocessing the existing tailings. In August 2000, AMF signed an option agreement with Zinc Corp. of South Africa (Zincor), which was a zinc smelting company, for Zincor to earn up to a 50% interest in Kipushi by investing up to $3.5 million. During its due diligence study, Zincor concluded that a small-scale Phase I project could be economic at a production rate of concentrates that contained 30,000 to 50,000 t/yr of zinc, and it exercised its option. A full Phase I feasibility study was scheduled for 2001. The partners were still negotiating for a final Mining Concession from the Government, ratified by Presidential Decree, to operate the Kipushi Mine and determining the fiscal terms of its arrangement with the Government (American Mineral Fields Inc., April 2, 2001, AMF first quarter 2001 update—Letter to shareholders, accessed May 1, 2001, at URL http://www.am-min.com/ reports/2001/ shareholder%27s%20Report.pdf).

Industrial Minerals

Diamond.—MIBA accounted for about one-quarter of the total national production of diamonds from mining operations in Mbuji Mayi in Kasai Province. MIBA was owned by the Government (80%) and the Sibeka Group (20%), which was owned by Union Minière of Belgium (79%) and De Beers Centenary AG (20%). MIBA produced 4.8 million carats per year of low-value, near-gem quality stones in 1999; this was a decrease of 30% compared with that of 1998. Production in 2000 was estimated to be 4.5 million carats; the actual production, however, is uncertain owing to reports that some diamond concessions were awarded to countries that were providing military aid to the Government. In July 2000, the Government reportedly signed an agreement with International Diamond Industries, which was an Israeli company, that gave the company the exclusive right to export diamonds from state-owned mining operations in return for a payment of $20 million. After currency controls failed to halt the smuggling of diamonds, the Government felt this arrangement would more-effectively control the security and the origin of diamond production from Congo (Kinshasa) to distinguish them from illegally mined "conflict" diamonds (Namibian, August 9, 2000, DRC gives diamond monopoly to Israelis, accessed September 2, 2000, via URL http://www.namibian.com.na/).

Mineral Fuels

Congo Gulf Oil Co., which was owned by Chevron Corp. of the United States (50%), Teikoku Oil Co. Ltd. of Japan (32.3%), and Unocal Corp. of the United States (17.7%), produced approximately 17,000 bbl/d of crude petroleum from seven offshore wells in 2000. Congo Gulf Oil accounted for about 60% of national petroleum production. The only domestic oil refinery, which was at Muanda, had a rated capacity of 17,000 bbl/d. Other companies that were operating in Congo (Kinshasa) included Ocelot International Ltd. and Japan National Oil Co.

Reserves

Major mineral resources were generally considered to be sufficient for many years of production with known copper ore grades running two to eight times the grade of typical copper ore mined in North America and South America. Reserve data on cobalt, copper, diamond, gold, and zinc, however, have not been updated for several years and must be reevaluated in light of current (2000) economic conditions in Congo (Kinshasa) and the deterioration of Gécamines mines and other facilities. Reserves of oil, gas, and coal were estimated to be 187 million barrels, 1 billion cubic meters, and 88 Mt, respectively (U.S. Energy Information Administration, February 2001, Southern African Development Community, accessed April 8, 2001, at URL http://www.eia.doe.gov/emeu/cabs/sadc.html).

Infrastructure

Congo (Kinshasa) is an essentially landlocked country with only a small coastal area on the Atlantic Ocean. The main port of Matadi, which has a 160-km river approach, has had difficulty operating at its 2-Mt/yr cargo capacity. Waterfalls below the capital of Kinshasa make the Congo River unnavigable to the sea and limit the world's second largest river as a significant export route, although it is a key inland commercial route.

A combination of air, railroad, road, and river boat transport was used to move equipment, food, and other supplies into the mining and mineral-processing regions and for exporting ores, concentrates, and finished mineral products. Even prior to the breakout of civil war, much of this transport network was in varying degrees of disrepair. Locomotive and rolling stock shortages were also a problem. Sizarail was a critical logistical support link for the diamond industry between the Zambian border and Mbuji Maya.

The major companies involved in transportation were Government owned. Small private trucking and river boat companies provided limited local service. Historically, mineral products were sometimes shipped from the Copperbelt west on the Voie Nationale, which was a difficult road-rail-water route and the only transport route entirely within the country to Matadi, east through Zambia on the Tazara railroad to the port of Dar es Salaam in Tanzania, or south through Zambia on rail lines that led to bulk-loading export ports in South Africa. Copper shipments could take 45 days to get from the plant to the dock either south via Zambia and Zimbabwe or eastward along the Tazara railroad via Zambia and Tanzania. Owing to rail and river transport problems, most cobalt and copper wirebar products were shipped via truck convoy to the port of Durban in South Africa. High-value cobalt, diamond, and gold were commonly flown out of the country.

Katanga Province, which is the site of most of the country's mining activity, historically consumed almost 50% of the nation's generated electrical power. A portion of the electricity used in the Katanga region was delivered by the 1,800-km-long, 560-megawatt Inga-Shaba transmission line, which runs from the Inga Dam on the Congo River south of Kinshasa to the Copperbelt city of Kolwezi in Katanga Province. Nevertheless, the tremendous hydroelectric potential of the Congo River remained largely untapped. For energy requirements at its mine and metallurgical operations, Gécamines was dependent on imported coke and refined petroleum products.

Outlook

The short-term economic prospects for Congo (Kinshasa) are poor and further threatened by the ongoing civil war, turnovers of Governments, and refugee problems and ethnic conflicts in the eastern provinces bordering Rwanda and Uganda. The decline of copper and cobalt production during the 1990's has led to the deterioration of Gécamines, which is the country's most important company. Despite almost insurmountable operating difficulties, Gécamines continued to operate, albeit at limited capacity. Changing Government policies that promote privatization of the state-run mining sector to attract new foreign capital and technical expertise holds some hope for the future but requires stronger guarantees of property title and investment security by the Government. Lack of transparency in business transactions with the Government and weak legal structures remain problems. Because of its size and wealth of resources, the long-term potential of Congo (Kinshasa) was more promising, and the country could return to world markets as an important supplier of cobalt, copper, diamond, and zinc. The future prospects for economic development of Congo (Kinshasa) depended on its ability to achieve political and economic stability and to put in place the legal and business framework needed to attract new foreign investment.

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Major Source of Information

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TABLE 1

CONGO (KINSHASA): PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity		1996	1997	1998	1999	2000
METALS						
Cobalt:						
Mine output, Co content e/ 3/		2,000	3,500	5,000 r/	6,000 r/	7,000 e/
Metal, Co content '4/		3,540 r/	2,808 r/	4,490 r/	5,180	4,320
Columbium and tantalum:						
Columbite-tantalite concentrate:						
Gross weight e/		NA 5/	NA 5/	NA 5/	NA 5/	450 e/
Nb content e/		NA	NA	NA	NA	130
Ta content e/		NA	NA	NA	NA	130
Copper:						
Mine output:						
By concentration or cementation		6,200	--	--	--	--
Leaching (electrowon)		43,800	39,651	34,994	32,000 r/ e/	21,000 e/
Total		50,000	39,651	34,944	32,000 r/ e/	21,000 e/
Metal:						
Smelter, primary:						
Electrowon (low grade)		43,800	40,000	40,000	32,000 e/	21,000 e/
Other		6,000	--	--	--	--
Total		49,800	40,000	40,000	32,000 e/	21,000 e/
Refinery, primary, electrolytic:		40,147	37,658	38,236	31,225	20,500
Gold 6/	kilograms	1,252	394	151	207	52
Silver e/	do.	500	500	--	--	--
Zinc, mine output, Zn content '6/		3,159	1,660	1,147	--	215
INDUSTRIAL MINERALS						
Cement, hydraulic 6/		240,790	124,929	134,324	171,210	96,000
Diamond: 6/ 7/						
Artisanal	thousand carats	15,437	15,558	19,252	15,328	13,200 e/
MIBA 8/	do.	6,803	6,419	6,831	4,788	4,500 e/
Total	do.	22,240	21,977	26,083	20,116	17,700 e/
Lime e/		50,000	50,000	25,000	25,000	25,000
Stone, crushed e/		200,000	200,000	100,000	100,000	100,000
MINERAL FUELS AND RELATED MATERIALS						
Coal, bituminous e/		10,000	5,000	5,000	--	--
Petroleum:						
Crude 6/	thousand 42-gallon barrels	10,707	10,146	9,444	8,650	10,300
Refinery products: e/						
Liquefied petroleum gas	do.	1	1	4 r/	4 r/	4
Gasoline	do.	89	89	434 r/	431 r/	431
Kerosene		90	90	340 r/	340 r/	340
Jet fuel	do.	45	45	175 r/	180 r/	180
Distillate fuel oil	do.	90	90	457 r/	460 r/	460
Residual fuel oil	do.	280	280	874 r/	880 r/	880
Refinery fuel and losses 9/	do.	135	135	200 r/	205 r/	205
Total	do.	730	730	2,484 r/	2,500 r/	2,500

e/ Estimated. r/ Revised. -- Zero. NA= Not available.

1/ Table includes data available through May 2001.

2/ Estimated data are rounded to no more than three significant digits; may not add to totals shown.

3/ Includes mine production and reprocessed tailings.

4/ Salable refined production only; excludes white alloy, matte

5 Columbite-tantalite concentrates are produced by artisanal miners, but data on production is speculative and unreliable for estimating.

6/ Reported data from Central Bank report: Economic activity-Volume of production-Mining and metallurgical production, August 2000.

7/ An estimated 20% of total diamond production is gem quality.

8/ Société Minière de Bakwanga, 80% owned by Government.

8/ Includes "Other."